IN THE CLAIMS:

Claims 1 through 20 remain cancelled. No claims have been amended herein. Please note that all claims currently pending and under consideration in the referenced application are shown below. This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1-20. (Cancelled)

21. (Previously Presented) A diode on a silicon substrate, comprising:

an active region in the silicon substrate, the active region being heavily doped with a first type dopant;

a refractory metal silicide layer contacting and covering at least a portion of the active region;

an insulation layer contacting and covering at least a portion of the first refractory metal silicide layer, the insulation layer having a diode opening extending therethrough and communicating with the first refractory metal suicide layer;

a polysilicon plug disposed within the diode opening and contacting the first refractory metal silicide layer, the polysilicon plug comprising:

a bottom portion in contact with the first refractory metal silicide layer and being lightly doped with the first conductivity type dopant, and

a top portion in contact with the bottom portion; and

a material that is capable of changing states and resistivities vertically over and in communication with the polysilicon plug.

22. (Previously Presented) A diode as defined in claim 22, wherein the material that is capable of changing states and resistivities comprises a programmable resistor, the diode further comprising a metal contact vertically over and in communication with the programmable resistor.

23. (Previously Presented) A diode as recited in claim 22, wherein the programmable resistor comprises at least one layer comprised of a memory material selected from the group consisting of ovonic and chalcogenide materials.

24. (Previously Presented) A diode as defined in claim 22, wherein the programmable resistor further comprises at least one barrier layer.

25. (Previously Presented) A diode as defined in claim 24, wherein said barrier layer comprises titanium nitride.

26. (Previously Presented) A diode as defined in claim 22, wherein the diode opening has a width in a range between about 0.3 microns to about 0.8 microns.

27. (Previously Presented) A diode as defined in claim 22, further comprising a continuous second refractory metal silicide layer positioned between the polysilicon plug and the first refractory metal silicide layer and also between the polysilicon plug and the insulation layer.

28. (Previously Presented) A diode as defined in claim 27, wherein the second refractory metal silicide layer is made of a refractory metal silicide selected from a group consisting of: titanium silicide, tungsten silicide, tantalum suicide, cobalt silicide, and molybdenum silicide.

29. (Previously Presented) A diode on a silicon substrate, comprising:

a silicon substrate lightly doped with a first conductivity type dopant;

an oxide layer overlaying the silicon substrate, the oxide layer having a top surface and defining a hole which extends through the oxide layer and communicates with a portion of the silicon substrate;

a polysilicon plug positioned within the hole in the oxide layer, the polysilicon plug being doped with a second conductivity type dopant opposite the first conductivity type dopant;

an active region formed in the silicon substrate below the polysilicon plug, the active region being doped with the second conductivity type dopant received from the polysilicon plug; and

a material that is capable of changing states and resistivities vertically over and in communication with the polysilicon plug.

30. (Previously Presented) A diode as defined in claim 29, wherein the oxide layer defines a channel that extends from the top surface of the oxide layer to the top surface of the polysilicon plug, the polysilicon plug having a top surface that is below the top surface of the oxide layer.

31. (Previously Presented) A diode as defined in claim 29, wherein the polysilicon plug is at least partially encased by the oxide layer;

32. (Previously Presented) A diode as defined in claim 29, wherein the material that is capable of changing states and resistivities comprises a programmable resistor, the diode further comprising a metal contact vertically over and in communication with the programmable resistor.

33. (Previously Presented) A diode as recited in claim 32, wherein the programmable resistor comprises at least one layer comprised of a memory material selected from the group consisting of ovonic and chalcogenide materials.

34. (Previously Presented) A diode as recited in claim 32, wherein the programmable resistor further comprises at least one barrier layer formed of titanium nitride.

35. (Previously Presented) A diode on a silicon wafer, comprising:

an active region in a silicon wafer, the active region being heavily doped with a first conductivity type dopant;

a first refractory metal silicide layer contacting and covering at least a portion of the active region;

an insulation layer contacting and covering at least a portion of the first refractory metal silicide layer, the insulation layer having a diode opening defined by an interior surface extending through the insulation layer and communicating with the first refractory metal silicide layer;

a second refractory metal silicide layer lining the interior surface of the diode opening so as to contact the first refractory metal silicide layer;

a polysilicon plug within the diode opening, the polysilicon plug being lightly doped with the first conductivity type dopant;

a platinum silicide layer contacting the polysilicon plug and separated from the second refractory metal silicide layer;

an insulative silicon layer overlying the diode opening, the insulative silicon layer having a passageway extending therethrough and communicating with the platinum silicide layer; and

a layer of a material that is capable of changing states and resistivities material over the insulative silicon layer, within the passageway, and contacting the platinum suicide layer.

36. (Previously Presented) A diode as defined in claim *35,* further comprising:

a metal contact in contact with the material that is capable of changing states and resistivities.

37. (Previously Presented) A diode as defined in claim 35, wherein the material that is capable of changing states and resistivities comprises a programmable resistor.

38. (Previously Presented) A diode as recited in claim 37, wherein the programmable resistor comprises at least one layer comprised of a memory material selected from the group consisting of ovonic and chalcogenide materials.

39. (Previously Presented) A diode as defined in claim 37, wherein the programmable resistor further comprises at least one barrier layer.

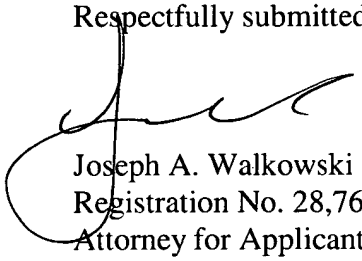
40. (Previously Presented) A diode as defined in claim 39, wherein the barrier layer comprises titanium nitride.

41. (Previously Presented) A diode as defined in claim 35, wherein the polysilicon plug comprises polysilicon having an average grain size diameter in a range between about 0.3 microns to about 0.8 microns.

CONCLUSION

Claims 21 through 41 are believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, he is respectfully invited to contact Applicants' undersigned attorney.

Respectfully submitted,



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Enclosures: Copy of Office Communication mailed May 17, 2005 (2 pages)
Request for Continued Examination (RCE) Transmittal (1 page)
Check No. 7942 in the amount of $790.00
Power of Attorney, Revocation of Prior Power of Attorney, and Request to Change Correspondence Address (2 pages)

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